

CLAIMS

We claim:

- 5 1. An inflatable module comprising:
 at least two breathable fabric layers being sealed together by a seal
 to form an inflatable cavity, each breathable fabric layer comprising an
 air impermeable, moisture vapor permeable layer and an adjoining inner
 reinforcing textile layer,
10 an adhesive, wherein the inner reinforcing textile layers are
 encapsulated by the adhesive and the air impermeable, moisture vapor
 permeable layers are in contact with the adhesive, to form the seal
 between the at least two breathable fabric layers, and
 a means for inflating said inflatable cavity incorporated into said module.
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2. The inflatable module of claim 1, wherein the at least two
 breathable fabric layers comprise inner reinforcing textile layers having
 an air impermeable, moisture vapor permeable coating thereon.
- 20 3. The inflatable module of claim 1, wherein the breathable fabric
 layer is a composite.
4. The inflatable module of claim 3 wherein the composite is an
 ePTFE/polyurethane composite laminated to a reinforcing textile layer.
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5. The inflatable module of claim 1, wherein the air impermeable,
 water vapor permeable layer is selected from a film, knit or nonwoven.
6. The inflatable module of claim 1 wherein the air impermeable,
30 water vapor permeable layer is a polyurethane.
7. The inflatable module of claim 1, wherein the reinforcing textile
 layer is a woven, knit or nonwoven material.
- 35 8. The inflatable module of claim 1, wherein the reinforcing textile
 comprises at least one of polyester, cotton, or nylon.

9. The inflatable module of claim 1, wherein the adhesive is selected from polyurethane, silicone and PVC polyvinyl chloride.

10. The inflatable module of claim 1, wherein the adhesive is selected from a reactive polyurethane and a thermoplastic polyurethane.

11. The inflatable module of claim 1, wherein the breathable fabric layers further comprise a microporous membrane layer.

12. The inflatable module of claim 1, wherein the module comprises a breathable insulation insert within a garment.

13. The inflatable module of claim 12, wherein a portion of the breathable insulation insert is encapsulated by the adhesive.

14. The inflatable module of claim 1 wherein said inflating means also functions to release pressure for deflation of the module.

15. The inflatable module of claim 1 in which the breathable fabric layer has a moisture vapor transmission rate of greater than 5000 g/m²/24 hours.

16. An inflatable module comprising:
at least two fabric layers being sealed together by a seal to form an inflatable cavity, each fabric layer comprising an air impermeable, moisture vapor permeable layer and an adjoining inner reinforcing textile layer,

an adhesive, wherein the inner reinforcing textile layers are encapsulated by the adhesive and the air impermeable, moisture vapor permeable layers are in contact with the adhesive, to form the seal between the at least two fabric layers,

a means for inflating the inflatable cavity incorporated into the module; and

a means for relieving pressure in the inflatable cavity when the cavity is inflated and subjected to external stresses exceeding a predetermined amount.

17. The inflatable module of claim 2 comprising a plurality of inflatable cavities formed by a seal, each of the cavities incorporating means for inflation and means for relieving pressure.

5 18. The inflatable module of claim 2 in which the means for relieving pressure is a pressure relief valve.

19. The inflatable module of claim 2, wherein the pressure relief valve relieves pressure when the module is subjected to an external stress
10 creating an internal pressure within the inflatable cavity of 0.4 psi or greater.

20. An inflatable module having increased strength comprising
at least two laminates being sealed together by a seal to form an
15 inflatable cavity, each laminate comprising a breathable fabric having an air impermeable, moisture vapor permeable layer and an inner reinforcing textile layer,
an adhesive, wherein the inner reinforcing textile layers are
encapsulated by the adhesive and the air impermeable, moisture vapor
20 permeable layers are in contact with the adhesive, to form the seal between the at least two laminates, and a means for inflating said inflatable cavity incorporated into said module.

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